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## Proceedings of the Club

WEDNESDAY EVENING, FEBRUARY 28, 1900

Vice-President Allen was in the chair ; thirty-two persons were present.

The Secretary announced the offer of the annual grant of \$50.00 from the Newberry Fund, open to candidates from the Scientific Alliance in Botany or Geology. Dr. Britton spoke relative to the coming meeting of the A. A. A. S. in New York. He suggested that it might be well instead of our usual Fourth of July excursion to provide an excursion to the Pine Barrens, which would follow the A. A. A. S. meeting, which closes June 30. The Torrey Club might provide during such an excursion for the personal expenses of such members of the A. A. A. S. as should be invited. A committee of five was appointed to secure contributions, select the personnel of the excursion and make all arrangements.

Dr. Britton read a letter from Miss Julia G. Noll, of 309 La Grande ave., Plainfield, N. J., inviting the Club to take one of its May excursions to Plainfield, N. J. The invitation was accepted with thanks and referred to the Field Committee.

Dr. Allen read a letter to the Club from Mrs. Allen, inviting the Club to visit their home, Hazelwood, Conn., as a Torrey Club excursion. The hospitable invitation was accepted with thanks, as a Decoration Day excursion ; to leave New York Tuesday, May 29, and referred to the Field Committee for action.

Dr. Britton reported that on February 9, *Helleborus niger*, the Christmas rose, expanded its petals at the Botanical Garden, and is still flowering under hay.

The first subject on the scientific programme was a "Note on *Apeiba*" by Dr. D. T. MacDougal, who showed specimens of leafy branches of this Tiliaceous tree, exhibiting flowers apparently seated on the leaves, an accidental but frequently quite stable position, due to abundant blossoms dropping from above, piercing lower leaves and lodging there. Dr. MacDougal witnessed this peculiarity in trees cultivated in Jamaica, originally from British Guiana.

The principal paper of the evening was a discussion by Dr. N.

L. Britton "On the Flowering Plants collected by Mr. R. S. Williams in the Yukon Territory, 1898-1899." Dr. Britton exhibited the plants collected, and by means of a sketch map of the region he compared the diverse floras of the Alaskan region.

TUESDAY EVENING, MARCH 13, 1900

President Brown in the chair ; twenty-six persons were present.

The paper of the evening was by Dr. P. A. Rydberg, on the "Phytogeography of Montana." He divided Montana into three regions, the Great Plains, constituting about one half of the State, and the subalpine and the alpine regions, the last constituting those isolated peaks which exceed 9000 feet. The characteristic plant-coverings of each region, termed formations, were classed under the usual groups as Xerophytic, Mesophytic, Hydrophytic and Halophytic and include, as Xerophytes :

1. The Buffalo-grass formation, the chief Xerophytic formation of the Great Plains, where high, dry plains are covered with low self-curing grasses giving excellent winter pasture ; including *Bouteloua oligostachya*, *B. hirsuta*, *Buchloe dactyloides*, and *Carex filifolia*.
2. The Cactus formation, with *Opuntia polyacantha*, *O. humifusa*, *Cactus viviparus*, *C. Missouriensis*, and *Lepidium apetalum*.
3. The Sage-brush formation, with *Artemisia tridentata*, *A. cana*, *A. tripartita*, *A. arbuscula*, together with species of *Chrysothamnus*, *Eurota*, and *Tetradynia*.
4. Bad-land formation, species of *Eriogonum* and *Astragalus*.
5. Pine-ridge formation, with *Pinus scopulorum* and *Juniperus occidentalis*.

Mesophytic formations of the Great Plains.

The Prairie formation, the most important, forming the grasslands in the river-valleys, its species belonging to the prairie region, and include species of *Agropyron*, *Elymus*, *Andropogon* and *Poa*.

7. The Dog-town formation ; four plants are found in all prairie-dog towns: *Chenopodium incanum*, *Solanum triflorum*, *Cryptantha crassisejala* and *Munroa squarrosa*.

8. The Sand-draw formation, with *Cleome trachysperma* and species of *Euphorbia*. In this confection were mentioned the weeds of the region, *Helianthus annuus*, *Chenopodium album* and *Avena fatua*, all introduced, and *Helianthus petiolaris*, *Chenopodium*

*leptophyllum*, *Eriocoma cuspidata*, *Phacelia linearis*, *Lygodesmia juncea*, natives.

Hydrophytic formations of the Great Plains include :

9. The Wet-meadows, covered with grasses and sedges, with species of *Calamagrostis*, *Poa*, *Agrostis*, *Spartina* and *Alopecurus*.

10. The Sand-bar formation, with *Salix fluviatilis* and *Shepherdia argentea*.

11. Purely aquatic plants, species of *Lemna*, *Potamogeton*, *Buttrichium* and *Nymphaea*.

Halophytic formations of the Great Plains include :

12. Salt-marsh formation, with *Spartina gracilis*, and two species of *Triglochin*.

13. The Alkali-flat formation, with *Agropyron Smithii*, and several Chenopodiaceous plants, as *Atriplex*, *Sarcobatus*, *Dondia*, etc.

Subalpine formations follow : first, the Xerophytes :

14. The Grass-covered Foothills and Bench lands ; with *Festuca ovina*, *Agropyrum spicatum*, *Elymus condensatus*, and *Avena Americana*.

15. Rock-crest formation, with species of *Heuchera* and *Eriogeron* ; and with the Bitter-root, *Lewisia rediviva*, the Montana state flower.

Mesophytic subalpine formations are :

16. The Poophytic, covering the drier valleys and grassy hill-sides ; the same grasses as in the drier Foothills, with addition of more valuable species, especially of *Poa*, as *P. Nevadensis*, *P. Buckleyana* and *P. lucida*.

17. The Hylophytic or Forest formation, the covering of wooded mountain-sides and pine flats ; all conifers, as *Pinus Murrayana*, *P. flexilis*, *P. albicaulis*, *Picea Engelmanni*, *P. Columbiana*, *Abies grandis*, *A. amabilis*, *Pseudotsuga mucronata* ; besides which occur along streams, *Alnus tenuifolia*, *A. sinuata*, *Betula occidentalis*, *B. glandulosa* and several species of *Salix*.

18. The chief Hydrophytic subalpine formation, that of the wet mountain-meadows, luxuriant in grasses and sedges. The most valuable hay plants there are *Phleum alpinum* (nearly related to the cultivated timothy), *Alopecurus occidentalis*, a foxtail grass, and two clovers, *Trifolium Beckwithii*, and *T. Rydbergii*.

The water plants of the mountain region are practically the same in the plains ; as are the halophytes.

There are also :

19. A Mountain-bog formation, with several species of *Phyllodoce*, *Kalmia microphylla*, *Ledum glandulosum* and *Salix chlorophylla*.

20. The Geyser formation peculiar to geyser and thermal waters are *Spraguea multiceps*, *Panicum thermale*, *Mentha rubella* and *Eleocharis thermale*; the latter growing in water hot enough to be unpleasant to the touch.

In the alpine region the differentiation into xerophytic, mesophytic and hydrophytic formations is less marked; halophytes are wanting, and the hylophytes are stunted specimens of *Pinus albicaulis* and *Abies subalpina*.

The peculiar alpine formations are :

21. Alpine clover-fields, with species of *Trifolium* only a few centimeters high, as *T. nanum*, *T. montanum*, *T. dasyphyllum*, and *T. Haydeni*.

22. The Alpine-willow formation, made up of *Salix nivalis*, *S. petrophila*, *S. tenera*, *S. glaucopsis*, and *S. Dodgeana*, the last one the smallest willow in the world, no specimen being two inches high. It was discovered on Electric Peak in the north border of the Yellowstone Park, at an altitude of 3300 m., and was named in honor of Mr. Wm. E. Dodge, of New York, through whose liberality this botanical exploration was prosecuted.

23. Finally the Rock-slide formation, with curious flora, consisting of *Claytonia megarrhiza*, *Alsine Americana*, *Arenaria Nuttallii* and *Gilia debilis*.

Dr. Rydberg's paper was followed by remarks by Judge Brown on the beauty of the mountain flora, and by Dr. Britton on the Dodge expedition of 1897, of which the paper is a result.

Professor Britton announced that the keys of the Museum building of the New York Botanical Garden had been turned over to him, and that the museums were immediately opened to the public. The installation of the temporary exhibit is going rapidly forward. President Brown added that the Torrey Club congratulates itself on the progress of the Botanical Garden, progress which is in large part the outcome of the Club's influence.

Adjournment followed.

EDWARD S. BURGESS,  
Secretary.